IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT:	KLAUS-LEO WILBUER, ET AL.	) Before the Board of Appeals
SERIAL NUMBER:	09/446,623	)
FILED:	March 21, 2000	)
FOR:	PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING	) Art Unit 3641)

REPLY BRIEF

I. THE REAL PARTY IN INTEREST

The real parties in interest in this Appeal are Metallveredlung GmbH & Co. KG and GNB Gesellschaft für Nuklear-Behälter mbH. Ownership by Metallveredlung GmbH & Co. KG and GNB Gesellschaft für Nuklear-Behälter mbH is established by assignment document recorded for this application on March 21, 2000, at Reel 010705, Frame 0448.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interference proceedings known to Appellants, Appellants' legal representatives, or assignees that will directly affect or be directly affected by or have a bearing on the decision of the Board of Patent Appeals and Interferences in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-10, 12 and 13 are pending. Claims 1-10, 12 and 13, as they stand, are set forth in Appendix VIII. Appellants hereby appeal the final rejection of Claims 1-10, 12 and 13.

IV. STATUS OF AMENDMENTS

There have been no amendments filed subsequent to receipt of the Office Action dated May 18, 2004.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a method of producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials. A basic material forming a shielding element is provided. (Specification, page 3, lines 17-8) A dispersion bath comprising nickel and boron and/or a boron compound is provided. (Specification, page 3, lines 11-16) The shielding element is contacted at least partly with the dispersion in the dispersion bath thereby (Specification, page 3, lines 7-10); providing a coating

wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element. (Specification, page 3, lines 11-15) During the contacting process, provides at least intermittently is a relative movement between the surface to be coated and the dispersion bath. (Specification, page 3, lines 7-10) The relative movement is produced "at least for a time" (e.g., at least intermittently). (Specification, page 3, lines 9-10) The shielding element is then separated from the dispersion bath. (Specification, page 4, 6th full paragraph)

In another embodiment, a shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials has a coating manufactured by a method comprising providing a basic material forming a shielding element. (Specification, page 3, lines 17-8) A dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron is provided. (Specification, page 3, lines 11-16) The shielding element is contacted at least partly with the dispersion in the dispersion bath (Specification, page 3, lines 7-10); thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element. (Specification, page 3, lines 11-15) Provided at least intermittently is a relative movement between the surface to be coated and the dispersion bath during the coating process (Specification, page 3, lines 7-10; page 3, lines 9-10). The shielding element is separated from the dispersion bath. (Specification, page 4, 6th full paragraph) The base material formed by an inorganic material. (Specification, page 3, lines 19-20) The coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix. (Specification, page 3, lines 11-15)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The rejections under U.S.C. § 112, first and second paragraphs have been withdrawn. Claim 13 stands rejected under 35 U.S.C. § 102(b) as anticipated by Baburek (EPO Publication EP 55679) (hereinafter "Baburek"). All of the claims stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (United States Patent No. 4,238,299) (hereinafter "Wang") in view of Baburek, with Claim 12 rejected in further view of United States Patent No. 3,616,279 to Kendall.

VII. ARGUMENT

As a preliminary note, Appellants note that the Examiner has pointed out that pages 3, 7 and 9 were missing from the appeal brief and attributes this to Appellant error. Attached as Attachment A is a fax confirmation clearly showing that all 24 pages of the appeal brief and transmittals were transmitted. Thus, the error appears to be on the side of the PTO. If the Examiner had simply telephoned once he realized pages were missing, Appellants would have immediately sent another copy of the appeal brief. A complete copy of the appeal brief is attached hereto for the Examiner's convenience as Attachment B.

A. Rejection of Claim 13 under 35 U.S.C. §102(b): Claim 13 is patentable over Baburek.

Claim 13 is directed to a shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the coating manufactured by a method comprising providing a basic material forming a shielding element; providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron; contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process; and separating the shielding element from the dispersion bath; and wherein said base material

formed by an inorganic material and said coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix.

Baburek discloses a box for underwater storage of irradiated nuclear fuel assemblies. The box includes a coating (I) consisting of boron carbide particles embedded in a nickel binder and a continuous layer (II) of nickel which covers the coating (I). Baburek teaches forming the coating (I) with a plasma torch using boron carbide powder grains coated with nickel. To obtain the boron carbide layer, it is necessary to have a plasma atmosphere surrounding the area where the nickel-bound boron carbide particles will be fixed on the continuous layer (II). Baburek thus discloses a two-layer structure in which one layer is a layer of boron carbide particles in a nickel binder and a second layer is a nickel layer.

In the Examiner's Answer, the Examiner points to Example 1 of Baburek where boron carbide-nickel coating described as "homogeneous" is produced. Appellants note that, consistent with the arguments put forth earlier in prosecution, the carbon-nickel coating is coated with a layer of nickel or stainless steel to increase wear (Baburek translation, page 12). This two-layer structure is consistent with the disclosure in the English abstract of Baburek. While Baburek describes the production of the boron carbide-nickel layer, a two-layer structure appears to be preferred.

For at least the foregoing reasons, all of the limitations of claim 13 are not taught in Baburek. Thus, the Examiner's rejection of claim 13 under 35 U.S.C. §102(b) as being anticipated by Baburek is improper. Appellants respectfully request the reversal of the 35 U.S.C. §102(b) rejection of claim 13 on these grounds.

B. Rejection of Claims 1-10, 12 and 13 under 35 U.S.C. §103(a): Claims 1-10, 12 and 13 are patentable over Wang in view of Baburek, with Claim 12 rejected in further view of United States Patent No. 3,616,279 to Kendall. .

Claims 1-10, and 12 are directed to a method for producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the method comprising providing a basic material forming a shielding element; providing a

dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron; contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element; providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process; and separating the shielding element from the dispersion bath. As described above, Claim 13 is a product by process claim. Claims 1 and 13 include the following limitation: "providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron".

In the Examiner's Answer, the Examiner clearly admits that Baburek does not teach a dispersion bath or a relative movement. The Examiner relies on Wang for the elements of a dispersion bath and relative movement, and cites an even distribution of boron particles as a motivating factor.

Baburek discloses a boron-nickel shielding element with only small amounts of boron carbide on the order of 20% by weight in relation to the nickel. Very heavy coatings are therefore needed resulting in a non-economical production method. Baburek does not disclose a dispersion bath and a relative movement between the bath and a surface to be coated as claimed in present claim 1.

Appellants have surprisingly found out that the design of a boron-nickel coating in a dispersion bath with relative movement for a time between the surface to be coated and the dispersion bath gives a very good result. In contrast to the embedding done in the past, the boron can be inserted into the nickel matrix in magnitudes > 20% by volume or even >40% by volume.

Thus, starting from Baburek, it was an object of the present invention to increase the boron magnitudes inserted into the nickel matrix. This object was solved according to the present invention by providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process.

Wang discloses a method of coating tubing with a layer a boron carbide embedded in copper, comprising the steps of: providing an electrolyte containing copper ions in contact with the surface of the tubing to be coated; depositing a layer of electrically nonconductive boron carbide particles through the electrolyte onto a portion of the outer surface of metal tubing in contact with the electrolyte containing copper ions; electrolytically depositing copper onto said outer surface of said tubing through said layer of nonconductive particles to build up an electrodeposited copper matrix substantially filling spaces between the nonconductive boron carbide particles deposited on said surface; and rotating said tubing and repeating the preceding depositing steps at another portion of the outer surface of said tubing.

According to one embodiment described in column 3, lines 11 to 41 of Wang, the boron carbide particles are introduced through a funnel while agitating the electrolyte with the stirrers. Thus, a relative movement is provided within the electrolyte in order to disperse the carbide particles in the electrolyte. However, the stirrers are stopped after the uniform suspension phase to allow the particles to settle onto the surface to be electroplated. Accordingly, no relative movement takes place during the electroplating process.

In the Examiner's Answer, the Examiner has interpreting the contacting as the entire coating process. As presently claimed, contacting is "contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element". Contacting is thus not the entire process, but the process during which the substrate is actually contacted with the boron to form a coating.

Also in the Examiner's Answer, the Examiner points to Figure 2a of Wang alleging that this figure shows a "uniform suspension phase". Appellants point out that Figure 2a is merely a schematic. In column 3, it is clearly stated that the stirrers are turned off to allow particles to settle during electroplating. Thus, during contacting, there is no relative movement. Appellants do not understand the Examiner's contention that

the boron carbide particles at the bottom of the suspension will contact the substrate before the stirrers are turned off. This is not contacting to produce a coating as is presently claimed.

According to a further embodiment described in column 3, lines 42 to 49 of Wang, boron carbides are introduced at a time, for example by adding about 10% of the total weight of boron carbide, while stirring the electrolyte. Thereafter, the stirring is stopped to allow the particles to settle between carbide additions. The plating current may remain on or off for the brief interval coinciding with each subsequent addition of boron carbide particles and agitation of the electrolyte, i.e. Wang sees no difference with respect to stirring or not stirring during the electroplating process. Thus, also this embodiment does not teach the artisan any advantages of providing a relative movement during the electroplating process.

According to yet another embodiment described in column 4, lines 22 to column 5, line 3 with reference to fig. 7 of Wang, the electrolyte as well as the tubing to be coated are placed in a drum which is rotated during the electroplating process in order to coat a plurality of tubings arranged along the inner circumference of the drum. There is no hint given with respect to the higher magnitude of boron with can be coated due to the relative motion.

Finally, according to the embodiment described in column 5, lines 4 to 49 referring to fig. 8 of Wang, one tubing as well as the electrolyte are placed in a drum which is rotated during the electroplating process in order to be able to coat all sides of the tubing in one coating step against the influence of gravity forces.

In summary, none of the embodiments described by Wang describes the advantage achieved by relative movement between the surface to be plated and the dispersion bath during the contacting process, namely that the magnitudes of the boron inserted into the nickel matrix can be highly increased.

Thus, starting from Baburek as the closest prior art document, the artisan would have no motion to combine this document with the process described by Wang in order to

solve the object of the present invention. Only improper hindsight based on the prior art documents will lead the artisan to the solution as claimed in claim 1. In applying Section 103, the U.S. Court of Appeals for the Federal Circuit has consistently held that one must consider both the invention and the prior art "as a whole", not from improper hindsight gained from consideration of the claimed invention. See, *Interconnect Planning Corp. v. Feil,* 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) and cases cited therein. According to the *Interconnect* court

> [n]ot only must the claimed invention as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time - a technician without our knowledge of the solution.

Id. Also critical to this Section 103 analysis is that understanding of "particular results" achieved by the invention. *Id.*

When, as here, the Section 103 rejection was based on selective combination of the prior art references to allegedly render a subsequent invention obvious, "there must be some reason for the combination other than the hind sight gleaned from the invention itself." *Id.* Stated in another way, "[i]t is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious." *In re Fritch* 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992)..

Appellants further particularly point out claim 5. Claim 5 relates to a method "wherein a dispersion bath with boron in element form is used". With respect to Claim 5, the Examiner alleges that it would be obvious to remove the carbon from the boron carbide compound. (May 18, 2004 Office Action, page 7) None of the cited art documents teaches the artisan to use elemental boron. Taking into account the fact that the cited prior art documents cover the last 20 years before the fling date of the present application, this can be taken as indication that using a dispersion bath with boron in element form is not self-evident for the artisan as asserted by the examiner and therefore inventive. In addition, removing the carbon from the boron element would lead to a totally different chemistry. For example, boron carbide as a boron-carbon compound is an easy to handle compound which has been produced since about 1899 on a ton-scale.

Elemental boron, on the other hand, is an expensive and dangerous to handle compound. It is thus not obvious to substitute elemental boron for boron carbide.

For at least the foregoing reasons, all of the limitations of independent Claims 1 and 13 are not taught or suggested by Wang and Baburek, either individually or in combination. Thus, the Examiner's rejection of Claims 1 and 13 under 35 U. S.C. §103(a) as being obvious over Wang in view of Baburek is improper. Because Claims 2-10 and 12 depend from Claim 1, and because claims that depend from a claim that is non-obvious are themselves necessarily non-obvious, Appellants submit that Claims 2-12 are non-obvious. Therefore, Appellants respectfully assert that the Examiner's rejection of Claims 2-12 is also improper. Appellants respectfully request the reversal of the 35 U.S.C. §103(a) rejection of Claims 1-12 and 13 on these grounds.

C. Conclusion

For the reasons discussed above, Appellants respectfully submit that this application is in condition for allowance and requests reversal of the outstanding rejections and early allowance of this application. If there are any additional charges with respect to this Appeal Brief or otherwise, they may be charged to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By: Karen A. LeCuyer

Karen A. LeCuyer
Registration No. 51,928
Customer No. 23413

Date: April 24, 2006
Address: 55 Griffin Road South, Bloomfield, CT 06002
Telephone: (860) 286-2929

VIII. CLAIMS APPENDIX

1. A method for producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the method comprising:

providing a basic material forming a shielding element;

providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron;

contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element;

providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process; and

separating the shielding element from the dispersion bath.

2. The method of Claim 1, wherein the relative movement is produced by moving the element to be coated through the dispersion bath.

3. The method as set forth in Claim 1, wherein the surface to be coated is arranged in a direction to the surface of the dispersion bath.

4. The method as set forth in Claim 1, wherein a dispersion bath with boron carbide is used.

5. The method as set forth in Claim 1, wherein a dispersion bath with boron in element form is used.

6. The method as set forth in Claim 1, wherein the coating is formed chemically.

7. The method as set forth in Claim 1, wherein the coating is formed electrolytically.

8. The method as set forth in Claim 1, wherein a coating 350 to 500 μm thick is produced.

9. The method as set forth in Claim 1, wherein boron or boron carbide with more than 20% by volume is embedded in the nickel matrix.

10. The method as set forth in Claim 1, wherein boron or boron carbide with more than 40% by volume is embedded in the nickel matrix.

11. (Canceled)

12. The method as set forth in Claim 1, wherein the method is carried out in a glass tub.

13. A shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the coating manufactured by a method comprising:

providing a basic material forming a shielding element;

providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron;

contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process; and

separating the shielding element from the dispersion bath; and

wherein said base material formed by an inorganic material and said coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix.

14. (Canceled)

IX. EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 C.F.R. §1.130, 37 C.F.R. §1.131, or 37 C.F.R. §1.132 or any other evidence entered by the Examiner and relied upon by the Appellant in this appeal, known to the Appellants, Appellants' legal representatives, or assignee.

X. RELATED PROCEEDING APPENDIX

There are no other related appeals or interferences known to Appellants, Appellants' legal representatives, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

ATTACHEMENT A

Auto-Reply Facsimile Transmission

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Nov 18 2005 4:22PM CANTOR COLBURN LLP 0602060115 P.1

CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8)

Applicant(s): Klaus-Leo Wibbeler

Application No.	Filing Date	Examiner	Group Art Unit	Docket No.
09/446,623	March 21, 2000	Chambers	3641	SWR-0084

Invention: PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING

I hereby certify that this Second Supplemental Appeal Brief (21) ; Copy of Notice of Non Compliance (4)
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ATTACHEMENT B

CERTIFICATE OF TRANSMISSION BY FACSIMILE (37 CFR 1.8) Applicant(s): **Klaus-Leo Wilbuer**	Docket No. **SWR-0004**

Application No.	Filing Date	Examiner	Group Art Unit
09/446,623	**March 21, 2000**	**Chambers**	**3641**

Invention: **PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING**

I hereby certify that this **Second Supplemental Appeal Brief (21 ; Copy of Notice of Non Compliance (4)**
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on **November 18, 2005**
(Date)

Tracy A. Axiak
(Typed or Printed Name of Person Signing Certificate)

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TRANSMITTAL LETTER (General - Patent Pending)	Docket No. SWR-0004

In Re Application Of: **KLAUS-LEO WILBUER**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/446,623	March 21, 2000	Chambers	23413	3641	2649

Title: **PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING**

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Second Supplemental Appeal Brief and Copy of Notice of Non-Compliant Appeal Brief

in the above identified application.

- ☒ No additional fee is required.
- ☐ A check in the amount of is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. **06-1130** as described below.
  - ☐ Charge the amount of
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Karen A. LeCuyer
Signature

Dated: **November 18, 2005**

Karen A. LeCuyer
Registration No. 51,928
Phone No. 860-286-2929

via facsimile

I hereby certify that this correspondence is being deposited ~~with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the~~ "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT:	KLAUS-LEO WILBUER, ET AL.	) Before the Board of Appeals
SERIAL NUMBER:	09/446,623	)
FILED:	March 21, 2000	)
FOR:	PROCESS FOR PRODUCING A NEUTRON-ABSORBING COATING	) Art Unit 3641)

SECOND SUPPLEMENTAL APPEAL BRIEF

I. THE REAL PARTY IN INTEREST

The real parties in interest in this Appeal are Metallveredlung GmbH & Co. KG and GNB Gesellschaft für Nuklear-Behälter mbH. Ownership by Metallveredlung GmbH & Co. KG and GNB Gesellschaft für Nuklear-Behälter mbH is established by assignment document recorded for this application on March 21, 2000, at Reel 010705, Frame 0448.

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There are no other appeals or interference proceedings known to Appellants, Appellants' legal representatives, or assignees that will directly affect or be directly affected by or have a bearing on the decision of the Board of Patent Appeals and Interferences in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-10, 12 and 13 are pending. Claims 1-10, 12 and 13, as they stand, are set forth in Appendix VIII. Appellants hereby appeal the final rejection of Claims 1-10, 12 and 13.

IV. STATUS OF AMENDMENTS

There have been no amendments filed subsequent to receipt of the Office Action dated May 18, 2004.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is directed to a method of producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials. A basic material forming a shielding element is provided. (Specification, page 3, lines 17-8) A dispersion bath comprising nickel and boron and/or a boron compound is provided. (Specification, page 3, lines 11-16) The shielding element is contacted at least partly with the dispersion in the dispersion bath thereby (Specification, page 3, lines 7-10); providing a coating

wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element. (Specification, page 3, lines 11-15) During the contacting process, provides at least intermittently is a relative movement between the surface to be coated and the dispersion bath. (Specification, page 3, lines 7-10) The relative movement is produced "at least for a time" (e.g., at least intermittently). (Specification, page 3, lines 9-10) The shielding element is then separated from the dispersion bath. (Specification, page 4, 6th full paragraph)

In another embodiment, a shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials has a coating manufactured by a method comprising providing a basic material forming a shielding element. (Specification, page 3, lines 17-8) A dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron is provided. (Specification, page 3, lines 11-16) The shielding element is contacted at least partly with the dispersion in the dispersion bath (Specification, page 3, lines 7-10); thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element. (Specification, page 3, lines 11-15) Provided at least intermittently is a relative movement between the surface to be coated and the dispersion bath during the coating process (Specification, page 3, lines 7-10; page 3, lines 9-10). The shielding element is separated from the dispersion bath. (Specification, page 4, 6th full paragraph) The base material formed by an inorganic material. (Specification, page 3, lines 19-20) The coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix. (Specification, page 3, lines 11-15)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-10, 12 and 13 stand rejected under 35 U.S.C. § 112, first paragraph. Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph. Claim 13 stands rejected under 35 U.S.C. § 102(b) as anticipated by Baburek (EPO Publication EP 55679) (hereinafter "Baburek"). All of the claims stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wang (United States Patent No. 4,238,299) (hereinafter "Wang") in view of Baburek.

VII. ARGUMENT

A. Rejection of Claims 1-10, 12 and 13 under 35 U.S.C. § 112, first paragraph

Claims 1-10, 12, and 13 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Specifically, the Examiner states "dispersion is the act or process of dispersing; the state of being dispersed". Further, the Examiner alleges "Applicant's arguments make it clear that the "relative movement" does not create the dispersion but is a separate and distinct step". The Examiner also alleges that "the applicant's specification fails to define "dispersion bath" and fails to disclose how it is created in the first place". (May 18, 2004 Office Action, page 3)

Appellants submit that dispersion is a chemical term meaning "a distribution of finely divided particles in a medium". (McGraw-Hill Dictionary of Chemistry, 1997) A dispersion bath as used in the present application is simply a dispersion of boron or boron compound particles which can be contacted with a shielding element. Dispersions are well-known in the chemical art as well as methods of making dispersions. Appellants submit that because the term dispersion is used as it is known in the chemical arts, and because methods of making dispersions are well-known in the chemical arts, no further description is required regarding the formation of a dispersion. A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332, Fed. Cir. 1991); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231, USPQ 81, 94 (Fed. Cir. 1986, *cert denied* 480 U.S. 947 (1987); and *Lindemann Machinefabrik GMBH v. American Hoist & Derrick Co.* 730 F.2d 1452,

1463, 221 USPQ 481, 489 (Fed. Cir. 1984). Appellants submit that because the term dispersion is used as it is known in the chemical arts, and because methods of making dispersions are well-known in the chemical arts, no further description is required regarding the formation of a dispersion.

Regarding the Examiner's statement that ""relative movement" does not create the dispersion but is a separate and distinct step" (May 18, 2004 Office Action, page 3), Appellants note that while the relative movement does not create the dispersion, the relative movement may "achieve[] continuously good mixing or repeated mixing of the dispersion". (Specification, page 4, lines 7-8) Thus, while the relative movement does not create the dispersion, the relative movement can maintain the dispersion.

Claims 1-10, 12, and 13 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement for containing subject matter which was not conveyed in the Specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. In particular, the Examiner alleges that the Specification does not provide support for the claim limitation "at least intermittently" in describing the time period for the relative movement between the surface to be coated and the dispersion bath. The Examiner goes on to provide the definition of intermittently as "not continuous" and states that the phrase "at least intermittently" embraces continuous relative movement. The Examiner alleges "Applicant's specification, as originally filed did not provide support for a continuous mixing process". (May 18, 2004 Office Action, page 3) Appellants respectfully disagree.

In the present Specification, on page 3, second paragraph, the relative movement between the surface to be coated and the dispersion bath is described as "at least for a time". Claim 1 as originally filed described the relative movement as "at least from time to time". Appellants submit that the phrases "at least for a time" and "at least from time to time" embrace both intermittent or not continuous movement as well as continuous movement. Appellants contend that the specification as filed provides ample support for "at least intermittently". The Specification merely requires that there be relative movement between the surface to be coated and the dispersion bath for some period of

time. There is nothing in the Specification to suggest that the movement is not continuous as the terms used to describe the movement embrace continuous movement.

Claims 1-10, 12, and 13 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. In particular, the Examiner alleges that the Specification as filed does not provide support for "at least intermittently" to the extent that this phrase includes a motion which is continuous. The Examiner first cites the Specification on Page 2, paragraph 2 and states that the phrase "at least for a time" "is undefined since time can be infinitesimal or infinite". (May 18, 2004 Office Action, page 4) The Examiner then cites the Specification on page 4, last paragraph which states "The plates were all turned every half hour in the bath and moved up and down from time to time in order to produce a relative movement between the surface and the dispersion bath". The Examiner then mistakenly concludes that the "references suggest a relative movement that is, at best, performed occasionally and not [] continuously". (May 18, 2004 Office Action, page 3) Appellants respectfully disagree with the Examiner.

Appellants submit that there is nothing about the phrase "at least for a time" that eliminates the possibility of continuous movement. When read as a whole, the Specification describes a relative movement between the surface to be coated and the dispersion bath, the purpose of which is to keep the boron particles in agitation, or to keep them dispersed in the dispersion bath. The relative movement is an alternative to standard techniques such as recirculation or pumping which require use of a recirculation or pumping unit which can wear out over time. As specifically described on page 4, paragraph 2 of the Specification, "relative movement, on one hand, achieves continuously good mixing or repeated mixing of the dispersion, and on the other hand, directly taking the dispersion to the surface to be coated". This statement clearly embraces both continuous mixing as well as repeated or intermittent mixing. One of skill in the art, when reading the Specification as a whole, would understand that the relative movement may be carried out in a continuous or not a continuous manner so long as the boron particles are maintained in a dispersion. The relative movement may be continuous or not continuous so long as the boron particles are flooded in the dispersion bath. Regarding

the Example on page 4 cited by the Examiner, this is merely one experiment illustrating the method and should not be construed as limiting the claims in any way.

Appellants thus submit that the Specification as filed provides support for the claim limitation "at least intermittently" and is enabled for this limitation.

Appellants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, first paragraph.

B. Rejection of Claim 1 under 35 U.S.C. § 112, second paragraph

Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner alleges that the phrase "contacting process" is unclear. (May 18, 2004 Office Action, page 3) Appellants respectfully traverse the rejection.

Claim 1 of the present application claims, in part,

> contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element;
>
> providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process

Thus, in claim 1 "contacting the shielding element" and "during the contacting process" are self-consistent and require no further explanation. Reading claim 1 carefully, it is clear that "contacting the shielding element" provides a "coating". Contacting is the action of bringing the shielding element in contact with the dispersion to produce a coating. Thus, because contacting leads to formation of a coating, there is no antagonism between the terms "contacting" and "coating". Support for this interpretation for use of the terms contacting and coating can be found in the Specification at least on page 3, second paragraph. Claim 13 reads in part:

> contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least

intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process

As stated above, because contacting leads to the production of a coating, contacting and coating are not antagonistsic. This interpretation is consistent with the Specification as filed.

Appellants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

C. Rejection of Claim 13 under 35 U.S.C. §102(b): Claim 13 is patentable over Baburek.

Claim 13 is directed to a shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the coating manufactured by a method comprising providing a basic material forming a shielding element; providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron; contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process; and separating the shielding element from the dispersion bath; and wherein said base material formed by an inorganic material and said coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix.

Baburek discloses a box for underwater storage of irradiated nuclear fuel assemblies. The box includes a coating (I) consisting of boron carbide particles embedded in a nickel binder and a continuous layer (II) of nickel which covers the coating (I). Baburek teaches forming the coating (I) with a plasma torch using boron carbide powder grains coated with nickel. To obtain the boron carbide layer, it is necessary to have a plasma atmosphere surrounding the area where the nickel-bound boron carbide particles will be fixed on the continuous layer (II). Baburek thus discloses a two-layer structure in which one layer is a layer of boron carbide particles in a nickel

binder and a second layer is a nickel layer. There is no suggestion in Baburek that one layer may be used in isolation.

In making the rejection, the Examiner alleges that the product disclosed in Baburek is identical to the presently claimed product because Baburek discloses a shielding element having a boron carbide content of 50 wt.% in the nickel matrix. Appellants respectfully disagree. In the May 18, 2004 Office Action, the Examiner states "the Derwent cover sheet provided by the applicant clearly discloses "Box for underwater storage of irradiated nuclear fuel assemblies- is made of sheet metal with neutron absorbing coating of boron carbide particles *embedded* in nickel". (May 18, 2004 Office Action, page 5)

To anticipate a claim under 35 U.S.C. § 102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988). Moreover, the single source must disclose all of the claimed elements "arranged as in the claim." *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984).

Present claim 13 claims a coating wherein boron and/or compounds of boron are embedded in a nickel matrix. Because the coating is formed from a dispersion bath containing nickel and boron and/or a boron compound, a cross-cut through the coating would reveal a substantially continuous composition. The coating of Baburek, in contrast, is one in which a plasma torch is used to fix nickel-bound boron carbide particles on a continuous nickel layer. The coating of Baburek is essentially a sandwich-type structure in which a boron carbide-nickel layer is coated with a nickel layer. A cross-cut through the coating of Baburek would reveal a sandwich-type structure with layers having different compositions. Because the cross-sections of the two coatings are entirely different, the presently claimed coating is not identical to the coating described in Baburek.

For at least the foregoing reasons, all of the limitations of claim 13 are not taught in Baburek. Thus, the Examiner's rejection of claim 13 under 35 U.S.C. §102(b) as being

obvious over Baburek is improper. Appellants respectfully request the reversal of the 35 U.S.C. §102(b) rejection of claim 13 on these grounds.

D. Rejection of Claims 1-10, 12 and 13 under 35 U.S.C. §103(a): Claims 1-10, 12 and 13 are patentable over Wang in view of Baburek.

Claims 1-10, and 12 are directed to a method for producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the method comprising providing a basic material forming a shielding element; providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron; contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element; providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process; and separating the shielding element from the dispersion bath. As described above, Claim 13 is a product by process claim. Claims 1 and 13 include the following limitation: "providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron".

Baburek was described in detail above. Baburek does not disclose a dispersion bath and thus does not disclose relative movement between a surface to be coated and a dispersion bath.

Wang discloses a method for producing shielding elements containing boron carbide particles embedded in a copper matrix. Wang teaches that a tube of stainless steel is removably situated on the bottom of an electrolytic cell so as to be disposed in electrical contact with a cathode contact connected to a current source. (Column 3, lines 6-12) The cell is filled with "conventional copper electrolyte solution 24 containing copper ions" such that "[t]he entire cell 10 is filled to a level about anode 12....". (Column 3, lines 16-18) Anode 12 is connected to the current source. "[B]oron carbide particles 26 are introduced through funnel 14 *while agitating the electrolyte solution with the stirrers 16*". (Column 3, lines 20-22, emphasis added) A thin layer of copper is

plated on the exposed upper surface of the tube (before or during the introduction of the boron carbide particles) to improve the bonding between the stainless steel and the layer to be built up on the tube surface. (Column 3, lines 24-27) "*[T]he stirrers 16 are [then] stopped to allow the [boron carbide] particles to settle onto the surface of the tube 18 while electroplating proceeds...,*" thereby trapping the boron carbide particles in the copper plate. (Column 3, lines 29-31, emphasis added) As such, Wang teaches a method of electroplating boron carbide particles onto the tube by stopping agitation to allow the boron carbide particles to settle onto the tube. Thus, there is no dispersion of the boron carbide *during* the contacting process. Because there is no dispersion of particles, there can be no movement relative to a dispersion during the contacting process. Further, in this embodiment, there is no movement of the surface to be coated during contacting.

In another embodiment, a rotation of the tubes to be coated to expose the next face "after plating" is disclosed. (Column 4, lines 19-22) This process differs from the claimed process because the tube rotation does not occur during contacting with the electrolyte solution. As with the embodiment described above, there is also no dispersion of the boron carbide during the contacting process.

In yet another embodiment, square tubes are arranged around the circumference of a rotatable drum filled with an electrolyte containing copper ions. (Column 4, lines 32-45) Boron carbide particles are introduced into the electrolyte and evenly distributed over the surfaces of the tubes by "first slowly rotating the assembly and then increasing the rotational speed gradually until the boron carbide particles settle evenly on the inside surface of the drum". (Column 4, lines 45-52) In another arrangement, the tube is mounted coaxially in the rotatable drum. (Column 5, lines 4-9) The boron carbide particles "circulate and fall evenly onto the outside surfaces of the square tubing continuously". (Column 5, lines 16-20) In both cases, during the contacting process, the boron carbide particles are not dispersed in the electrolyte, otherwise they would not settle on the surface to be coated. There is no dispersion of the boron carbide during contacting in this embodiment because the particles are added and simply fall onto the surface to be coated. Because there is no dispersion of particles, there can be no movement relative to a dispersion during the contacting process.

In particular, the Examiner alleges that Baburek discloses a nickel-boron shielding element, but fails to disclose the claimed relative movement. The Examiner further alleges that "Wang discloses a dispersion bath manufacturing process for nuclear radiation shields including a relative movement provided at least intermittently (col. 4, 12-68, and col. 5, 4-32)". (May 18, 2004 Office Action, page 6) The Examiner also alleges that Wang discloses "providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron (col. 3, ll. 15-22)". (May 18, 2004 Office Action, Page 6). The Examiner further alleges that "Because the plating currents remain on during introduction of the boron particles, there will necessarily be a settling of some of the particles during the stirring process". (May 18, 2004 Office Action, page 6) Appellants respectfully disagree.

The present claims include "providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron" and "providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process". Baburek does not teach a dispersion bath or a relative movement as presently claimed. Appellants maintain that Wang also does not teach a dispersion bath as presently claimed and thus does not cure the defects of Baburek.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1996).

Unlike Appellants' claimed invention, Wang and Baburek fail to teach a dispersion bath during contacting. Baburek does not teach a dispersion, bath, but instead teaches formation of a coating using a plasma torch. As previously stated, Wang teaches the deposition of boron carbide resulting from the physical "settling out" of the boron carbide particles from the liquid phase of the electrolyte solution once agitation has ceased. In the embodiments of Wang where the tubes are rotated during contacting, the boron carbide particles are not dispersed in the solution, but rather "settle[d] evenly on the inside surface of the drum" and then rotating the drum while electroplating copper (column 4, lines 45-62), or alternatively the particles "fall evenly onto the outside surfaces of the square tubing continuously". (column 5, lines 16-19) In none of these cases is a dispersion bath employed during the contacting process.

In making the rejection, the Examiner cited Column 3, lines 15-22 of Wang as teaching a dispersion bath. This section of Wang appears to describe a "copper electrolyte solution". (Wang, column 3, line 17) Further in Wang "[boron] carbide particles 26 are being dispersed in the electrolyte". (Wang, column 3, lines 23-24) Continuing in Wang "After the uniform suspension phase . . . the stirrers 16 are stopped to allow the particles 26 to settle onto the surface of the tube 18". (Wang column 3, lines 28-31). Further in Wang, 10% of the boron carbide may be added "stirring slowly for one minute and then stopping stirring to allow the particles to settle". (Wang, column 3, lines 41-46) The Examiner alleges that some of the boron carbide particles will settle during stirring because the current may be left on. Appellants note that the boron carbide particles of Wang are nonconductive and only the copper of Wang is deposited electrolytically. Thus, the presence of a current during stirring would not be expected to result in the deposition of boron carbide particles. Appellants maintain that while a dispersion may exist prior to contacting in Wang, there clearly is not a dispersion during the contacting process. In the method of Wang, when there is a dispersion of boron carbide particles, the particles are not coated, and when the particles are coated there is not a dispersion of boron carbide particles, but a population of "settling" boron carbide particles.

Wang does not meet the present claim limitation of "providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process". Thus, there is at least one element of the present claims, i.e., the dispersion bath during the contacting process that is not taught by either Baburek or Wang.

Moreover, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references to arrive at Appellants' claimed invention. Baburek teaches application of a coating containing *nickel* and boron carbide by plasma torch which is a physical method. Wang teaches an electrochemical method of forming a coating containing *copper* and boron carbide. There is no teaching or suggestion in either Baburek or Wang that an electrochemical method such as that disclosed in Wang would be suitable for deposition of a nickel and boron carbide coating. Copper and nickel are different elements having different properties and a method which is suitable for use with copper is not necessarily suitable for use with nickel. Therefore, Appellants submit that there is no suggestion or motivation to combine Wang and Baburek as the Examiner has done.

There is further no expectation of success for using an electrochemical method as taught in Wang to form a nickel and boron carbide coating. The electroplating method for depositing boron carbide particles onto the surface of a tubing taught in Wang is quite distinct from the plasma torch method for depositing boron carbide onto a casing taught in Baburek. That is, these methods have different parameters and working conditions, and are workable on different types of materials. Consequently, since Baburek teaches a method quite distinct from that taught in Wang, there is no expectation of success in utilizing the materials disclosed in Baburek in an electroplating method as disclosed in Wang. Thus, there is no expectation of success in combining Baburek and Wang.

Further, if one were to properly combine Baburek and Wang, one would obtain a sandwich type structure as in Baburek having a first layer containing nickel and boron

carbide and a second layer containing nickel. This sandwich-type coating is not the coating structure obtained in the presently claimed methods.

Therefore, because neither Wang nor Baburek, either alone or in combination, teaches or suggests all of the claim limitations of Claims 1 and 13 (i.e., providing a dispersion bath), there is no motivation to combine, and no expectation of success, Appellants respectfully submit that a prima facie case of obviousness has not been established for these claims.

Furthermore, because Claims 2-10, and 12 depend from Claim 1, and because claims that depend from a claim that is non-obvious are themselves non-obvious, Appellants assert that Claims 2-10 and 12 are non-obvious.

With respect to Claim 2, the Examiner cites Wang at Column 4, lines 48-59. Claim 2 relates to the method "wherein the relative movement is produced by moving the element to be coated through the dispersion bath". Because Baburek and Wang do not teach a dispersion bath during contacting, they do not teach movement of an element to be coated through a dispersion bath and do not render Claim 2 obvious.

With respect to Claim 3, the Examiner cites Wang at Column 4, lines 12-17 and Figures 1, 6 and 7. Claim 3 relates to a method "wherein the surface to be coated is arranged in a direction to the surface of the dispersion bath". Because Baburek and Wang do not teach a dispersion bath during contacting, they do not teach arrangement in a direction to a surface of the dispersion bath and do not render Claim 3 obvious.

With respect to Claim 4, the Examiner cites Wang at Column 3, lines 19-22 and Column 4, lines 45-46. Claim 4 relates to a method "wherein a dispersion bath with boron carbide is used". Because Baburek and Wang do not teach a dispersion bath, they do not teach a dispersion bath with boron carbide during contacting and do not render Claim 4 obvious.

With respect to Claim 5, the Examiner alleges that it would be obvious to remove the carbon from the boron carbide compound. (May 18, 2004 Office Action, page 7) Claim 5 relates to a method "wherein a dispersion bath with boron in element form is

used". Because Baburek and Wang do not teach a dispersion bath during contacting , they do not teach a dispersion bath with a boron in element form and do not render Claim 4 obvious. In addition, removing the carbon from the boron element would lead to a totally different chemistry. For example, boron carbide as a boron-carbon compound is an easy to handle compound which has been produced since about 1899 on a ton-scale. Elemental boron, on the other hand, is an expensive and dangerous to handle compound. It is thus not obvious to substitute elemental boron for boron carbide.

With respect to Claim 6, the Examiner alleges that "Baburek discloses a method for coating a shielding element with a boron-nickel layer using a plasma torch". (May 18, 2004 Office Action, page 7) Claim 6 relates to a method "wherein the coating is formed chemically". Formation with a plasma torch is a physical, not a chemical method. Baburek thus does not render this claim obvious as alleged by the Examiner.

With respect to Claim 7, the Examiner alleges that "Wang discloses electrolytic boron carbide deposition". (May 18, 2004 Office Action, page 8) Appellants disagree. Claim 7 relates to a method "wherein the coating is formed electrolytically". Wang discloses electrolytic deposition of copper through an electrolytically nonconductive boron carbide layer. Thus only the copper of Wang is deposited electrolytically. The current claim is directed to electrolytic deposition of the entire coating, not just one element.

With respect to Claim 8, the Examiner alleges that "the thickness of the coating is controlled by the quantity of coating material used and, therefore, involves only routine skill in the art". (May 18, 2004 Office Action, page 8) Claim 8 is directed to a method "wherein a coating 350 to 500 μm thick is produced". The thickness of the coating is dependent not only on the materials used but also on the method used to produce the coating. Since Baburek and Wang do not appear to disclose the claimed coating thickness, it is unclear if their disclosed methods would be suitable to produce a coating having the presently claimed thickness.

With respect to Claims 9 and 10, the Examiner states that Baburek discloses a boron carbide content of 50 wt.%. (Paper 23, Page 5) Present Claim 9 is directed to the

method "wherein boron or boron carbide with more than 20% by volume is embedded in the nickel matrix". Present Claim 10 is directed to the method "wherein boron or boron carbide with more than 40% by volume is embedded in the nickel matrix". As stated previously, the methods of Baburek and Wang are different from the presently claimed methods because neither Baburek nor Wang discloses a dispersion solution as presently claimed.

With respect to Claim 12, the Examiner cites Wang Column 2, lines 58-61. Claim 12 is directed to a method "wherein the method is carried out in a glass tub". In the lines cited by the Examiner, Wang discloses a Lucite vessel, not a glass vessel. Wang does not appear to disclose a glass vessel.

Regarding Claim 13, neither Wang nor Baburek discloses the presently claimed process or the product produced by the process. As discussed above, Baburek discloses a sandwich-type coating which is distinct from that which is presently claimed. There is no teaching or suggestion in Baburek of a substantially continuous coating as is produced by the presently claimed method. With regard to Wang, Wang does not disclose a coating containing nickel.

For at least the foregoing reasons, all of the limitations of independent Claims 1 and 13 are not taught or suggested by Wang and Baburek, either individually or in combination. Thus, the Examiner's rejection of Claims 1 and 13 under 35 U. S.C. §103(a) as being obvious over Wang in view of Baburek is improper. Because Claims 2-10 and 12 depend from Claim 1, and because claims that depend from a claim that is non-obvious are themselves necessarily non-obvious, Appellants submit that Claims 2-12 are non-obvious. Therefore, Appellants respectfully assert that the Examiner's rejection of Claims 2-12 is also improper. Appellants respectfully request the reversal of the 35 U.S.C. §103(a) rejection of Claims 1-12 and 13 on these grounds.

E. Conclusion

For the reasons discussed above, Appellants respectfully submit that this application is in condition for allowance and requests reversal of the outstanding

rejections and early allowance of this application. If there are any additional charges with respect to this Appeal Brief or otherwise, they may be charged to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

By: Karen A. LeCuyer
Karen A. LeCuyer
Registration No. 51,928
Customer No. 23413

Date: November 18, 2005
Address: 55 Griffin Road South, Bloomfield, CT 06002
Telephone: (860) 286-2929

VIII. CLAIMS APPENDIX

1. A method for producing a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the method comprising:

providing a basic material forming a shielding element;

providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron;

contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element;

providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the contacting process; and

separating the shielding element from the dispersion bath.

2. The method of Claim 1, wherein the relative movement is produced by moving the element to be coated through the dispersion bath.

3. The method as set forth in Claim 1, wherein the surface to be coated is arranged in a direction to the surface of the dispersion bath.

4. The method as set forth in Claim 1, wherein a dispersion bath with boron carbide is used.

5. The method as set forth in Claim 1, wherein a dispersion bath with boron in element form is used.

6. The method as set forth in Claim 1, wherein the coating is formed chemically.

7. The method as set forth in Claim 1, wherein the coating is formed electrolytically.

8. The method as set forth in Claim 1, wherein a coating 350 to 500 μm thick is produced.

9. The method as set forth in Claim 1, wherein boron or boron carbide with more than 20% by volume is embedded in the nickel matrix.

10. The method as set forth in Claim 1, wherein boron or boron carbide with more than 40% by volume is embedded in the nickel matrix.

11. (Canceled)

12. The method as set forth in Claim 1, wherein the method is carried out in a glass tub.

13. A shielding element having a coating for absorbing neutrons created in a nuclear reaction of radioactive materials, the coating manufactured by a method comprising:

providing a basic material forming a shielding element;

providing a dispersion bath whereby a dispersion of the dispersion bath comprises nickel and boron and/or compounds of boron;

contacting the shielding element at least partly with the dispersion in the dispersion bath thereby providing a coating wherein boron and/or compounds of boron are embedded in a nickel matrix on the contacted surface of the shielding element and providing at least intermittently a relative movement between the surface to be coated and the dispersion bath during the coating process; and

separating the shielding element from the dispersion bath; and

wherein said base material formed by an inorganic material and said coating has more than 20% by volume of boron and/or compounds of boron thereof embedded in a nickel matrix.

14. (Canceled)

IX. EVIDENCE APPENDIX

There is no evidence submitted pursuant to 37 C.F.R. §1.130, 37 C.F.R. §1.131, or 37 C.F.R. §1.132 or any other evidence entered by the Examiner and relied upon by the Appellant in this appeal, known to the Appellants, Appellants' legal representatives, or assignee.

X. RELATED PROCEEDING APPENDIX

There are no other related appeals or interferences known to Appellants, Appellants' legal representatives, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.